

Amendments to the Claims

Please cancel Claims 2 and 14. Please amend Claims 1, 7-9, 15, and 16. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A method for automatic gain control in a radio frequency receiver that outputs a down-converted, digitized signal, the method comprising the steps of:
 - coupling a received radio frequency (RF) signal to a variable gain receiver amplifier, the variable gain receiver amplifier having a gain control input, to produce a gain controlled RF signal;
 - digitizing the gain controlled RF signal to produce a received digital signal;
 - determining a wideband variance value from the received digital signal;
 - determining a narrowband variance value from the received digital signal; ~~and~~
 - if the narrowband variance value is less than the wideband variance value, using the narrowband variance value to set the gain control input on the gain controlled receiver; and
 - if the wideband variance value is greater than the narrowband variance value,
 - comparing the narrowband and wideband variance values to determine a scale factor for the input to the variable gain amplifier.
2. Cancelled
3. (Original) A method as in claim 1 additionally comprising the step of:
 - down-converting the received digital signal, to produce a down-converted signal;
 - filtering the down-converted signal to produce a filtered received signal;
 - determining the narrowband variance value from the filtered received signal.
4. (Original) A method as in claim 3 wherein the down-converted signal is a baseband signal.

5. (Original) A method as in claim 3 additionally comprising the step of:
quadrature demodulating the down-converted signal, to produce an in-phase (I) and quadrature (Q) signal used in determining the narrowband variance value.
6. (Original) A method as in claim 1 wherein the wideband variance value is determined directly from the received digital signal.
7. (Currently Amended) ~~A method as in claim 1~~ A method for automatic gain control in a radio frequency receiver that outputs a down-converted, digitized signal, the method comprising the steps of:
coupling a received radio frequency (RF) signal to a variable gain receiver amplifier, the variable gain receiver amplifier having a gain control input, to produce a gain controlled RF signal;
digitizing the gain controlled RF signal to produce a received digital signal;
determining a wideband variance value from the received digital signal;
determining a narrowband variance value from the received digital signal; and
if the narrowband variance value is less than the wideband variance value, using the narrowband variance value to set the gain control input on the gain controlled receiver, wherein the wideband variance value is determined from components of the received RF signal across a bandwidth which is at least twice as wide as a bandwidth of the intended received signal.
8. (Currently Amended) ~~A method as in claim 1~~ A method for automatic gain control in a radio frequency receiver that outputs a down-converted, digitized signal, the method comprising the steps of:
coupling a received radio frequency (RF) signal to a variable gain receiver amplifier, the variable gain receiver amplifier having a gain control input, to produce a gain controlled RF signal;
digitizing the gain controlled RF signal to produce a received digital signal;

determining a wideband variance value from the received digital signal;
determining a narrowband variance value from the received digital signal; and
if the narrowband variance value is less than the wideband variance value, using
the narrowband variance value to set the gain control input on the gain controlled
receiver, wherein the narrowband variance value is determined from components of the received RF signal across a bandwidth which is less than twice a bandwidth of the intended received signal.

9. (Currently Amended) An automatic gain control apparatus for use in a radio frequency receiver that outputs a down-converted, digitized signal, the apparatus comprising:
 - a variable gain amplifier coupled to receive a radio frequency (RF) signal, the variable gain receiver amplifier having a gain control input, and to produce a gain controlled RF signal;
 - a digitizer, connected to digitize the gain controlled RF signal to produce a received digital signal;
 - a wideband variance detector, for determining a wideband variance value from the received digital signal;
 - a narrowband variance detector, for determining a narrowband variance value from the received digital signal;
 - a comparator, for comparing the wideband variance value and narrowband variance value, to set a reference level for the automatic gain control loop circuit, wherein the narrowband variance value is connected to set the gain control input on the gain controlled receiver; and
 - a comparator, for comparing the narrowband and wideband variance values to determine a scale factor for the input to the variable gain amplifier.
10. (Original) An apparatus as in claim 9 wherein the wideband variance value is determined directly from the received digital signal.
11. (Original) An apparatus as in claim 9 additionally comprising:

a down-converter, for down-converting the received digital signal, to produce a down-converted signal;

a filter, connected to receive the down-converted signal, and to produce a filtered received signal; and

wherein the narrowband variance detector determines the narrowband variance value from the filtered received signal.

12. (Original) An apparatus as in claim 9 wherein the down-converted signal is a baseband signal.
13. (Original) An apparatus as in claim 9 additionally comprising:
 - a quadrature demodulator, connected to receive the down-converted signal, and to produce an in-phase (I) and quadrature (Q) signal used in determining the narrowband variance value.
14. Cancelled.
15. (Currently Amended) ~~An apparatus as in claim 9~~ An automatic gain control apparatus for use in a radio frequency receiver that outputs a down-converted, digitized signal, the apparatus comprising:
 - a variable gain amplifier coupled to receive a radio frequency (RF) signal, the variable gain receiver amplifier having a gain control input, and to produce a gain controlled RF signal;
 - a digitizer, connected to digitize the gain controlled RF signal to produce a received digital signal;
 - a wideband variance detector, for determining a wideband variance value from the received digital signal;
 - a narrowband variance detector, for determining a narrowband variance value from the received digital signal;

a comparator, for comparing the wideband variance value and narrowband variance value, to set a reference level for the automatic gain control loop circuit, wherein the narrowband variance value is connected to set the gain control input on the gain controlled receiver, wherein the wideband variance value is determined from components of the received RF signal across a bandwidth which is at least twice as wide as a bandwidth of the intended received signal.

16. (Currently Amended) ~~An apparatus as in claim 9~~ An automatic gain control apparatus for use in a radio frequency receiver that outputs a down-converted, digitized signal, the apparatus comprising:

a variable gain amplifier coupled to receive a radio frequency (RF) signal, the variable gain receiver amplifier having a gain control input, and to produce a gain controlled RF signal;

a digitizer, connected to digitize the gain controlled RF signal to produce a received digital signal;

a wideband variance detector, for determining a wideband variance value from the received digital signal;

a narrowband variance detector, for determining a narrowband variance value from the received digital signal;

a comparator, for comparing the wideband variance value and narrowband variance value, to set a reference level for the automatic gain control loop circuit, wherein

the narrowband variance value is connected to set the gain control input on the gain controlled receiver, wherein the narrowband variance value is determined from components of the received RF signal across a bandwidth which is less than twice a bandwidth of the intended received signal.